

A User's Guide to FSMGDOS

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Introduction:

This document describes the new features of FSMGDOS and FONTGDOS. We should begin with a quick review of what GDOS is and what it allows you to do. GDOS is actually an extension of your operating system. It allows the programs that you run to output text and graphics to printers and other devices besides the screen. GDOS also enables you to print text in many different font faces. Instead of typing characters in the standard system font, you now have access to Swiss, Times, Lucida and a multitude of other fonts. GDOS is run when you first turn on your machine. For now, don't worry about where to put it or what it needs to run. Our install program will set your system up so that everything will be placed in the correct location.

Basic Concepts:

FSMGDOS represents the latest and by far the most powerful release of Atari GDOS. Your first question is probably, "What's the difference between the GDOS that I have now and FSMGDOS?" The main difference between the two is that FSMGDOS allows programs to print in scalable outline fonts instead of bitmap fonts. Outline fonts offer high-quality text at all sizes, whereas bitmap fonts are limited to a small number of sizes that become unappealing when crudely scaled by the system. Furthermore, unlike bitmap fonts, which are found in GDOS, outline fonts allow you to use the same font file to print any size character on almost any output device. This is because the description of the characters and not the character data is stored in the font file. An "a" for example is built using the same set of rules whether it's built at 10 point or at 24 point. This means you no longer need a separate font for the different screen resolutions and, more importantly, you no longer need separate fonts for your printers and other devices. FSMGDOS can create all of these characters for all devices and all sizes using the same font description.

If you want to continue using some of the bitmap fonts that came with GDOS, that's fine. FSMGDOS will still support bitmap fonts. In fact, another new feature in FSMGDOS is "font caching". With old versions of GDOS, every bitmap font that you used took up memory, and your machine would quickly run out of space. With font caching, you tell FSMGDOS how much memory that you wish to devote to storing your bitmap fonts. This memory is called a cache. FSMGDOS will load in the font as it's used. When there is no longer any room for the next font, FSMGDOS will get rid of one of the fonts to make room. As long as the memory that you allocate is bigger than the largest font, FSMGDOS will be able to use as many bitmap fonts as you wish in a limited amount of space. For those of you who are using STs without enough memory to support FSMGDOS, (an ST with less than a megabyte of ram) we have included a GDOS called FONTGDOS. FONTGDOS does not work with fsm fonts, but does have all of the font caching capabilities mentioned above.

Getting Started

Installing FSMGDOS or FONTGDOS onto your system is a simple task. Either you already have FSMGDOS pre-installed on your hard drive, or you have to install it from floppies. In the former case, you don't need to do anything. In the latter, put disk #1 into your floppy drive. Run INSTALL.PRГ to put a new GDOS onto your system. The install program will walk you through the steps needed to install your GDOS. When the installation is completed, you will have all of the necessary files on your system to begin.

After the installation is completed, you must reboot your machine to enable the new edition of GDOS. If you've installed it correctly, you'll get the new FSMGDOS or FONTGDOS sign-on message while you boot up. If all went well, GDOS was installed and you should be seeing a normal desktop. If GDOS gives you an error message while booting up, run the install program again paying close attention to any installation error messages which may come up. Note that the installation program will install brand new device drivers, and that old drivers will not work with either FSMGDOS or FONTGDOS.

Try running the demo program, PAGEOMAT.PRG which was placed in the PAGEOMAT directory. Unlike your old GDOS programs, this program was written especially for FSMGDOS and its scalable fonts. If you are running FSMGDOS, notice that you have access to any size of font as well as arbitrary rotation, arbitrary skew, mirroring, and many other features. Use the built in help function to assist you in using the program.

FSMGDOS should be compatible with whatever word processor and draw programs that you have now. Try running some of these programs to see how they work with FSMGDOS. Note that the installation program will set up your system so that you can use all of your new FSM fonts immediately. To change the set-up (e.g. you want to add more point sizes), read the next section on how to use the FSM Font Manager accessory.

In addition to the Font Manager, two other accessories/CPX's have been provided. The first one, the Printer Config accessory, is used to change your printer driver configuration; you can change the page size, number of colors, and etc. The other one, the Printer Selector, is used to select the type of printer that you are currently using and to manage the older style bitmap fonts. You should not need to use these accessories very often, since the install program should set up your system to be ready to use. For more information on these two accessories, please refer to Appendix II. Both of these accessories are compatible with FONTGDOS. Since FONTGDOS is identical to your old GDOS from a user's point of view, most of the rest of the manual will be devoted to the discussion of FSMGDOS.

The FSM Font Manager

The FSM Font Manager allows you to configure FSMGDOS to your particular system. Using the accessory, you can tell FSMGDOS which fonts you want to use and what point sizes you want available for each font. After bringing up the FSM Font Manager, you will notice a list of installed fonts. These are the fonts currently active, which means that you will be able to use them in your applications. When you click on one of the font names (and it becomes highlighted), two buttons will appear that will let you delete the font or change the available point sizes. You can also double-click on a font name to change its point sizes. The point sizes that you choose are the ones that you can use with applications, although newer programs allow you to choose any point size without specifying them through the accessory. In order to add different fonts, you can use the "Options Menu" and choose the "Show Inactive Fonts" option. Now, you can choose from the list of unused fonts, and activate them. Select some inactive fonts and click on the "Activate Font(s)" button. The fonts will be activated, and they will be available when you run your applications. You can see the new fonts on the other list by going to the "Options Menu" and choosing the "Show Active Fonts" option. At any time, you can click on the save box to save your changes.

The FSM "Options Menu" enables you to access other parts of the accessory. Clicking on the "FSM cache Options" menu item brings up a dialog box which allows you to manipulate the FSM cache. Remember that FSM must build its characters before it displays them. You may notice a slight delay the first time that you type a character. Because FSM stores (caches) away the generated character data, the next time you display those characters they will be output much quicker.

Using the FSM cache options dialog box, you are able to load, save, or flush your fsm character cache. At first glance, you can see how useful these functions can be. As an example, say you had a document that contained only Lucida Roman in 10, 14, and 18 point characters. Since the characters are being displayed on the screen, you know that they've been cached by FSM. Save the cache, using a name that you can easily associate with your document file. The next time you're ready to load this file, flush the cache, then read in the cache which was saved out with your file. After loading the document notice how fast the screen is able to redraw. This is because FSM does not need to generate any of the character data for the document. An append function ("Merge Cache") allows you to add character data to your cache instead of replacing the already existing data. It should be noted here that your cache is not lost when you exit your program. If you leave your program then enter it again without a reboot, your cache will be preserved. If the FSM accessory detects a file named default.fsm in your FSM directory when your machine boots up, it will automatically be loaded into the cache.

Click on the "Make Width Tables" menu option to save out a set of widthtables. You don't really need to know what widthtables are, but they can greatly improve the speed of an application. Call the software company that produced the application you are using to see if they recommend using widthtables (NOTE: Most applications no longer require widthtables.). Otherwise, a test to see if using widthtables is worthwhile is to build them and make sure the widthtable option is set to "Yes"; then try running an application to see if it comes up faster than when the widthtable option is set to "No". If it is faster, then continue using widthtables. Just remember to build them whenever you change something in the accessory and it warns you to build them. Note that you may need to build widthtables again if you change resolutions.

The dialog box which is brought up when you click on the "Outline Font Setup" menu item allows you to set directory paths, cache sizes, widthtable option, and symbol/hebrew files. The items in this dialog box will probably not need to be changed that often. Refer to Appendix I to find out what these settings represent. Notice a button on the lower left hand corner of the dialog box named "Defaults". Clicking on this button will bring you into a dialog box which will let you set default point sizes for the fonts that have been, or will be installed. This saves you the trouble of setting the point size of every font if you want them to share the same point sizes. Use the "Set All Fonts" button to set point sizes for fonts which have already been installed. Otherwise, only fonts which are installed later are affected.

Conclusion

You now know enough about FSMGDOS to be able to use it to print scalable fonts using both new and existing programs. At the end of this document is a quick reference guide; the guide should assist you to use FSMGDOS and its accessories/CPX's. If you want more details about how FSMGDOS works, please go on to the following appendices

Appendix I

A Detailed Look at FSMGDOS

The EXTEND.SYS file provides a mode of communication between you and FSMGDOS. This works in very much the same manner as the way that GDOS is given information through its ASSIGN.SYS file. Your fsm accessory handles the details of what is contained in this file.

As mentioned before, FSMGDOS will also handle the caching of bitmap fonts. It is a good idea to make the bitmap cache larger than the biggest bitmap font that you have in your ASSIGN.SYS file. If the cache is too small for a font, the font will not be loaded into the system. If the cache is too small to hold any bitmap fonts, fsm will ignore them altogether. If you don't plan to use bitmap fonts, you can set the cache size to be 0.

FSMGDOS maintains two other caches to keep track of FSM font information. The first of the two, the character cache, holds the actual character data (i.e. the bitmap of the individual character). When a character is requested, FSMGDOS builds the bitmap using the instructions which it gets from the font file. This takes a fair amount of time. Instead of building the character each time it is requested, FSMGDOS saves the bitmap of the character into the cache. The next time FSMGDOS needs the character, it simply retrieves it from the cache taking a fraction of the time that it would have taken to build it. Obviously, the performance of your machine will improve as you devote more memory to this cache. The second cache ("miscellaneous") used by FSMGDOS is used for internal buffers and data structures. The size needed for this cache varies depending on how many fonts and point sizes are included in your EXTEND.SYS. The cache size needed also depends on the size of the characters that must be generated. With all of the variables involved, it is hard to recommend an optimal amount of memory to devote to this cache. To make matters worse, if GDOS does happen to fill up this cache, system limitations prevent it from safely grabbing another chunk of memory to handle the overflow. The result is a "Not enough FSM Cache memory" message. When you see this message, save your document as soon as possible and increase the amount of cache. You must reboot your machine to incorporate the new cache size. When you're adding fonts or modifying the cache size in the FSM accessory, the accessory will warn you if it determines that your temporary cache is too small. Again, experiment with these values to tune it for your particular system. If you've got 4 megabytes on your system, you are able to allocate a lot more cache. If you're working with 1 megabyte, you may need to decrease these numbers. For normal usage (i.e. no 200 point characters), 100000 bytes or so is probably the most that you will need for the second cache.

To set the sizes for all available caches, go to the "Options Menu" of the FSM Font Manager accessory and click on the "Outline Font Setup". From there, click on "Set Font Cache." The top cache, labelled "Character", is the cache where the individual outline font characters are stored. This should be set to a minimum of 50000 bytes, although if your system has only a megabyte of memory, 20000 bytes would be reasonable. The second cache, "Miscellaneous", should be set to at least 50000 bytes, or 20000 bytes if you are short of memory. Remember that if you do have a limited amount of RAM, you should correspondingly limit the number and size of fonts that you choose. You can use FSM fonts effectively on small systems with very small caches, as long as you aren't using too many fonts and you use normal point sizes (e.g. 10, 14, 24 pts.). Finally, the last cache is the "bitmap" cache where the old-style, GDOS bitmap fonts are stored. To set this cache, find out which bitmap fonts you use and what their file sizes are. To set the very minimal cache size, just set the cache to be as big as the biggest bitmap font file.

Programs need to obtain the widths of characters to determine where on the screen or page to place them. When the width of a character is requested, FSMGDOS will either get the width from the widthtables (if they're turned on), or, get the width from the font generator (if widthtables are turned off). If width tables are turned on, the user may notice long unexpected delays while the application is booting up. This delay is caused by the time it takes FSMGDOS to generate the tables. Obviously, the more fonts and point sizes you have, the longer the delay will be. The FSM accessory may be used to pre-build widthtables and store them into your FSM directory. When the application is being loaded, FSMGDOS sees if the widthtables are turned on, and then checks this directory to see if the width tables are there. If they are, FSM will load them in and use them, saving considerable time booting up the program. The widthtable must have been built in the same resolution that you're currently running the application in order for FSMGDOS to recognize it. Also, widthtables are only used for the screen, not for printers. Finally, it is important to note that most current versions of popular software do not require widthtables, but certain programs (e.g. Microsoft Write), for reasons too complicated to discuss here, need widthtables turned on in order for them to run correctly.

FSMGDOS generates its characters by looking in QFM files. The QFM files are separated into three different categories. The first kind of file is the main QFM file; this file contains information to create the most commonly used characters of a particular font style. The second and third category are the symbol and hebrew QFMs; these are the files that generate characters common to all font styles (e.g. all fonts share the same trademark symbol, pi, or greek characters). Therefore, in order to generate a full set of characters, FSMGDOS must have access to all three QFM files. If however, you only need part of the character set, you may exclude the symbol or hebrew QFMs using your accessory. Note that all QFM files end with the extender: ".qfm".

To install the symbol or hebrew files, go to the "Options Menu" and click on the "Outline Font Set-Up". For either symbol or hebrew, click on the filename or the box next to the "SYMBOL" or "HEBREW" (if the filename says "NONE"). You will see a file selector and you can choose a QFM file. FSMGDOS comes with one symbol and one hebrew file: LUCSYM.QFM (a symbol file) and LHEBRW.QFM (a hebrew file). You should never install a non-hebrew or non-symbol file to the HEBREW or SYMBOL slot, respectively.

An important difference between bitmap fonts and outline fonts is that a font and its set of point sizes are made available to all devices, automatically. With bitmap fonts, each device requires a different set of font files, whereas with outline fonts, FSMGDOS can scale fonts for any device. At least one point size must exist in order for fsmgdos to recognize the font. Fonts and point-sizes may be added/deleted/changed freely, but FSMGDOS will only recognize changes when the next application is launched.

As a side note, the QFM files are not the only files that must be in the FSM directory; OTL files must be present for FSM to work correctly. Each QFM file should have a corresponding OTL file (e.g. LUCB.QFM and LUCB.OTL). Also, some fonts require more than one OTL file (possibly with an unrelated filename). Thus, it is advised that you keep all of your FSM-related files in the FSM directory. Should an OTL file be missing, FSMGDOS will issue a warning, and any on-going application should be abandoned.

Appendix II

Using the Printer Selector and Printer Config Accessories

The main function of the Printer Selector is to allow you to choose which printer you wish to use with GDOS. This is particularly useful when you physically want to change printers (e.g. You switch from a dot-matrix printer for proofing to a laser printer for final output.). You can also select final or draft mode from this accessory. Selecting draft mode reduces the quality of output while speeding up printing time (Note that some printers do not support draft mode.). In addition, the Printer Selector is an accessory that manipulates the configuration file called the ASSIGN.SYS. This file contains the information on where GDOS locates its drivers and bitmap fonts and which of those GDOS should use. The installation program should have set up your ASSIGN.SYS file so that you don't really need to change anything. The accessory will be most useful to you when you need to change printers or add new bitmap fonts. Novice users should limit the changes made with this accessory although users familiar with the ASSIGN.SYS format will find it easy to configure their systems.

When you run the accessory, it should come up displaying the current printer. If you wish to use a different printer, just click on the printer name, and select from the list that pops down. Notice the two buttons labelled "Quality:" which allow you to choose final or draft mode. To change other drivers, as well as the bitmap fonts and the pathname used to find them, click on the "Options" button to enter a box containing three buttons. Clicking on "Set Font/Driver Path" will come up with the standard file selector and allow you to change where the fonts and drivers are found. If you click on "Driver Installation", the top half should display what the active devices are (i.e. the drivers that applications can use). Use the up and down arrows to look at the different device numbers and their corresponding drivers. Notice that you cannot delete the "screen.sys" drivers found in devices 1 to 10 (They should always use "screen.sys"), but you can change the others. Notice that device 21 corresponds to the "Current Printer" of the previous menu. You can change the driver from either menu, although the current menu allows you to change more than just the current printing device. The bottom half of this menu is used to add more devices to the active list. Novice users should not worry about this section. If you click on the "Font Installation" button, you can add or delete old-style, GDOS bitmap fonts for different devices. As you walk through the different devices, notice how each device has a set of fonts listed. These are the available bitmap fonts if an application uses that device. Note that devices 1 through 10 represent the different screen resolutions, and that device 21 is the printer device, the one that your applications are most likely to use. If you wish to add fonts for a particular application, add them to the devices that are listed in your application's manual. To actually add fonts, click on the drop-down menu called "Active Fonts" and click on "Show Inactive Fonts". Click on the fonts that you want (hold the shift key to select multiple fonts) and click on "Transfer".

The Printer Config accessory is used to change settings in the drivers for items such as the page size or number of colors. Configuring drivers should be done before running an application. If you click on "Select Drivers", select the printer whose driver you wish to change. You should then see a display of the driver specifications. Note that if a box is shadowed, you may change this value by clicking on it. If the particular printer driver you have chosen supports a particular feature (e.g. different page sizes or color palettes), use the pop-up menu to look at the available selections. All you need to do is click on the appropriate selection. Note that some do not have any configurable features, and that the CPX/accessory will modify the actual driver on your floppy or hard disk when a modification is made.

QUICK REFERENCE GUIDE

To Add FSM Font(s):

Run FSM Font Manager.
Use Options Menu to select "Show Inactive Font(s)".
Click on font names (shift-click to grab more than one).
Double click on font or click on "Activate Font" button.
Click on "SAVE".

To Delete FSM Font(s):

Run FSM Font Manager.
Click on desired font names (shift-click to grab more than one).
Click on "Deactivate" button.
Click on "SAVE".

To Set Cache Sizes:

Run FSM Font Manager.
Use Options Menu to select "Outline Font SetUp" and select "Set FSM Cache".
If you notice frequent regeneration of the screen characters or slow printer output, increase "Character" cache.
If "Out of memory" error messages appear, increase "Miscellaneous" cache.
If bitmap fonts that you've made active do not appear, increase the "Bitmap" cache.
Save and REBOOT.

To Set Point Sizes:

Run FSM Font Manager.
Double-click on a font or click on font and use "Activate" button.
Use buttons with numbers to select point sizes or click on "Add Point Size".
Click on point sizes and use the "Delete Point Size" button to remove sizes.

To Set Default Point Sizes:

Run FSM Font Manager.
Use Options Menu to select "Outline Font Setup".
Click on "Defaults" button.
Add/delete fonts.
To set all active fonts to the chosen point sizes, click on "Set All Fonts".

To Install Symbol/Hebrew Characters:

Run FSM Font Manager.
Use Options Menu to select "Outline Font Setup".
Click on either SYMBOL or HEBREW.
Use file selector to choose an appropriate QFM file (Ask your font supplier).

To Change Printer Drivers:

Run Printer Selector.
Click on pop-up below "Current Printer".
Select new driver and save.

To Change Bitmap Fonts:

Run Printer Selector.
Click on "Options" then on "Font Installation".
Select device number with up/down arrows (1-10 are the different screen resolutions, 21 is the printer).
To add fonts, click on "Active Fonts" menu, and choose the "Show Inactive Fonts" option. Click on desired fonts and use "Transfer" button to activate.

